

Practitioner's Docket No. U 013592-8

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PATENT TRADEMARK OFFICE

CHAPTER II

TRANSMITTAL LETTER  
TO THE UNITED STATES ELECTED OFFICE (EO/US)

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

PCT/AU00/00691	21 JUNE 2000	21 JUNE 1999
INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED

A LOCATING KEY FOR A KEYBOARD OR KEYPAD

TITLE OF INVENTION

ALBERTO B. SABATO

APPLICANT(S)

Box PCT  
Assistant Commissioner for Patents  
Washington D.C. 20231  
ATTENTION: EO/US

NOTE: The completion of those filing requirements that can be made at a time later than 30 months from the priority date results from the Commissioner exercising his judgment under the authority granted under 35 USC 371(d). The filing

CERTIFICATION UNDER 37 C.F.R. 1.10\*

(Express Mail label number is **mandatory**.)

(Express Mail certification is optional.)

I hereby certify that this correspondence and the documents referred to as attached therein are being deposited with the United States Postal Service on this date August 9, 2001, in an envelope as "Express Mail Post Office to Addressee," Mailing Label Number EL728245373US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

BARBARA D. SANTIAGO

(type or print name of person mailing paper)

*Barbara D. Santiago*  
Signature of person mailing paper

**WARNING:** Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

**\*WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).  
"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

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receipt will show the actual date of receipt of the last item completing the entry into the national phase. See 37 C.F.R. §1.491 which states: "An international application enters the national state when the applicant has filed the documents and fees required by 35 USC 371(c) within the periods set forth in § 1.494 and § 1.495."

**WARNING:** Where the items are those which can be submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. §1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing - See 37 C.F.R. §1.8.

**NOTE:** Documents and fees must be clearly identified as a submission to enter the national state under 35 USC 371 otherwise the submission will be considered as being made under 35 USC 111. 37 C.F.R. § 1.494(f).

1. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. 371:
  - a. ☒ This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).
  - b. ☒ The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

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## 2.Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
[ ]*	TOTAL CLAIMS	8- 20 =		x \$ 18.00 =	\$
	INDEPENDENT CLAIMS	3- 3 =		x \$ 80.00 =	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$270.00				
BASIC FEE**	<input type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: <input type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(2) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 CFR 1.492(a)(4)) ..... \$100.00 <input type="checkbox"/> and the above requirements are not met (37 CFR 1.492(a)(1)) ..... \$690.00  <input checked="" type="checkbox"/> U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: <input type="checkbox"/> has been paid (37 CFR 1.492(a)(2)) ..... \$710.00 <input checked="" type="checkbox"/> has not been paid (37 CFR 1.492(a)(3)) ..... \$1,000.00 <input type="checkbox"/> where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5)) ..... \$860.00				
	Total of above Calculations				=\$1,000.00
SMALL ENTITY	Reduction by ½ for filing by small entity, if applicable. Statement may also be filed. (note 37 CFR 1.9, 1.27, 1.28)				-\$500.00
	Subtotal				\$500.00
	Total National Fee				\$500.00
	Fee for recording the enclosed assignment document \$40.00 (37 CFR 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				
TOTAL	Total Fees enclosed				\$500.00

\*See attached Preliminary Amendment Reducing the Number of Claims.

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- A duplicate copy of this sheet is enclosed.

**\*\*WARNING:**

**WARNING:**

- 3.

**NOTE:**

- Date of mailing of the application (from form PCT/IB/308): December 28, 2000.

Date \_\_\_\_\_

- 4.

(Transmittal Letter to the United States Elected Office (EO/US)—page 4 of 8) **13-18**

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5. [X] Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

- a. ☐ are transmitted herewith.
  - b. ☐ have been transmitted
    - i. ☐ by the International Bureau.  
Date of mailing of the amendment (from form PCT/IB/308): \_\_\_\_\_.
    - ii. ☐ by applicant on \_\_\_\_\_.  
Date
  - c. ☒ have not been transmitted as
    - i. ☒ applicant chose not to make amendments under PCT Article 19.  
Date of mailing of Search Report (from form PCT/ISA/210):  
August 30, 2000.
    - ii. ☐ the time limit for the submission of amendments has not yet expired.  
The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.
6. ☐ A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)):
- a. ☐ is transmitted herewith.
  - b. ☐ is not required as the amendments were made in the English language.
  - c. ☒ has not been transmitted for reasons indicated at point 5(c) above.
7. ☒ A copy of the international examination report (PCT/IPEA/409)  
☒ is transmitted herewith.  
☐ is not required as the application was filed with the United States Receiving Office.
8. ☒ Annex(es) to the international preliminary examination report
- a. ☒ is/are transmitted herewith.
  - b. ☐ is/are not required as the application was filed with the United States Receiving Office.
9. ☒ A translation of the annexes to the international preliminary examination report
- a. ☐ is transmitted herewith.
  - b. ☒ is not required as the annexes are in the English language.

10. ☒ An oath or declaration of the inventor (35 U.S.C. 371(c)(4)) complying with 35 U.S.C. 115
- a. ☐ was previously submitted by applicant on \_\_\_\_\_  
Date
- b. ☐ is submitted herewith, and such oath or declaration
- i. ☐ is attached to the application.
- ii. ☐ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. 1.70.
- c. ☒ will follow.

Other document(s) or information included:

11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
- a. ☒ is transmitted herewith.
- b. ☐ has been transmitted by the International Bureau.  
Date of mailing (from form PCT/IB/308): \_\_\_\_\_
- c. ☐ is not required, as the application was searched by the United States International Searching Authority.
- d. ☐ will be transmitted promptly upon request.
- e. ☐ has been submitted by applicant on \_\_\_\_\_  
Date
12. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98:
- a. ☐ is transmitted herewith.  
Also transmitted herewith is/are:  
☐ Form PTO-1449 (PTO/SB/08A and 08B).  
☐ Copies of citations listed.
- b. ☒ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. 371(c).
- c. ☐ was previously submitted by applicant on \_\_\_\_\_  
Date
13. ☐ An assignment document is transmitted herewith for recording.

A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. ☒ Additional documents:
- a. ☒ Copy of request (PCT/RO/101)
  - b. ☒ International Publication No. WO 00/78551 A1
    - i. ☒ Specification, claims and drawing
    - ii. ☐ Front page only
  - c. ☐ Preliminary amendment (37 C.F.R. § 1.121)
  - d. ☒ Other

COPY OF FORM PCT IPEA/401 (DEMAND)

COPY OF FORM PCT/IB/308

15. ☒ The above checked items are being transmitted
- a. ☒ before 30 months from any claimed priority date.
  - b. ☐ after 30 months.
16. ☐ Certain requirements under 35 U.S.C. 371 were previously submitted by the applicant on \_\_\_\_\_, namely:

#### AUTHORIZATION TO CHARGE ADDITIONAL FEES

**WARNING:** *Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges if extra claims are authorized.*

**NOTE:** *"A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).*

**NOTE:** *"Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).*

☒ The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 12-0425.

☒ 37 C.F.R. 1.492(a)(1), (2), (3), and (4) (filing fees)

**WARNING:** *Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.*

☐ 37 C.F.R. 1.492(b), (c) and (d) (presentation of extra claims)

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NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

- ☒ 37 C.F.R. 1.17 (application processing fees)  
☒ 37 C.F.R. 1.17(a)(1)-(5)(extension fees pursuant to § 1.136(a).  
☒ 37 C.F.R. 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

- ☐ 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).

  
 SIGNATURE OF PRACTITIONER

WILLIAM R. EVANS

(type or print name of practitioner)

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# 4.



Practitioner's Docket No. U 013592-8

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Alberto B. SABATO  
Serial No.: 09/913,105  
Filed: August 9, 2001

For: A LOCATING KEY FOR A KEYBOARD OR KEYPAD

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**PRELIMINARY AMENDMENT**

Please amend the above identified application as follows:

**IN THE SPECIFICATION:**

Page 1, Line 6, replace the paragraph beginning there with the following:

A substantial number of modern electronic devices are equipped with a keyboard or keypad of some sort for manually inputting commands into the devices. The most common form of keyboard is that of the common household and business PC keyboard and the most common form of keypad is that of a phone.

**CERTIFICATE OF MAILING (37 CFR 1.8a)**

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231

Date: September 5, 2001

CLIFFORD J. MASS

*(Signature of person mailing paper)*

*(Type or print name of person certifying)*

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Page 1, Line 23, replace the paragraph beginning there with the following:

Untrained keyboard operators use what is called the "hunt and peck" system. Usually they use only their two forefingers or at most their four best fingers, the forefingers and middle fingers. This method requires that the typist keeps their eyes on the keyboard and this affects productivity. Although some of these typists can type about as fast as touch typists, very fast hunt and peck typing is more tiring than for the touch typist because the hands have to leap all around the keyboard to reach all the keys with only two or four fingers. In summary, to "keyboard" correctly, the typist must use the touch typing method described above. There is no middle ground in proper typing; if the typist is not typing correctly, he is typing incorrectly. Similar problems arise in the use of keypads.

Page 2, Line 23, replace the paragraph beginning there with the following:

There is disclosed herein a key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configuration so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

Page 4, Line 18, replace the paragraph beginning there with the following:

- (vii) a ridge on the next adjacent or next two adjacent keys to said bottom left end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

Page 6, Line 22, replace the paragraph beginning there with the following:

The keys of the standard keyboard 10 are generally identical in shape and size, except for the outer function and modifier keys which are usually horizontally elongated in order to give the complete standard keyboard a generally rectangular appearance. A normal key includes an upper finger engaging surface 2 of a generally square or rectangular configuration having a top edge portion 3 remote from a user, a bottom edge portion 4 adjacent a user, a left edge portion 5 and a right edge portion 6.

Page 7, Line 1, replace the paragraph beginning there with the following:

The standard keyboard generally consists of a main alphanumeric body of at least three, but usually five, parallel, horizontal rows of keys (FIG. 1). At least three rows could consist of a top row remote from a user, a middle row and a bottom row adjacent a user, the rows generally consisting of a series of alphanumeric keys followed by a series of function keys. For example, in Figure 1, each of the three middle rows 12, 13, 14 include a sequence of alphabetical and grammatical characters (such as the QWERTY or Dvorak sequence), bordered on the end of each row by modifier or function keys of some sort. That is, row 12 remote from the user has its alphanumeric keys starting with Q on the far left edge and finishing with P on the far right edge. Row 13 is an intermediate row and has its alphanumeric keys starting with A on the far left edge and finishing with L on the far right edge. Similarly, row 14 being adjacent a user has its alphanumeric keys starting with Z on the far left edge and finishing with M on the far right.

Page 8, Line 8, replace the paragraph beginning there with the following:

The foundation of the improved keyboard 20 the subject of at least a preferred embodiment of this invention, one variation of which is shown in FIG. 3, is the idea of providing certain keys with the means of generating a specific feedback. The feedback differs according to the position of the key and is such that the feedback of certain keys together, creates a virtual "box" within which the fingers can travel. In other words, the keys are so modified that a "wall" is created, which wall the fingers sense and within which wall they are guided (and almost forced) to operate. Therefore, not only the specific design of the keys gives the typist the exact feel for where the finger is, but also the keys are so modified that they almost "force" the typist to stay within the "walls" that the modifications have created.

Page 9, Line 1, replace the paragraph beginning there with the following:

2. The key "R" 24 has a generally "L" shaped ridge 25 applied to the top border and to the right border (FIG. 2B). The ridge 25 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the right border.

Page 9, Line 8, replace the paragraph beginning there with the following:

3. The key "V" 26 has a generally "L" shaped ridge 27 applied to the bottom border and to the right border (FIG. 2C). The ridge 27 is

designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the bottom border and one on the right border.

Page 9, Line 15, replace the paragraph beginning there with the following:

4. The key "Z" 28 has a generally "L" shaped ridge 29 applied to the bottom border and to the left border (FIG. 2D). The ridge 29 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower left corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the bottom border and one on the left border.

Page 9, Line 24, replace the paragraph beginning there with the following:

5. The keys "A" 30 and "F" 31 each have one ridge 32, 33 applied to the left border in the case of the key "A" 30 and to the right border in the case of the home key "F" 31 (FIG. 2E and FIG. 2F). These ridges 32, 33 are designed so that they provide the two fingers designated to use these keys with the feedback information that the fingers are in a "middle" row since the feedback is that of a lateral ridge without a corner. In other words, the finger senses that it is not in a "corner" position.

Page 10, Line 9, replace the paragraph beginning there with the following:

7. The key "P" 36 has a generally "L" shaped ridge applied to the top border and to the right border (similar to as shown in FIG. 2B). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the upper right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the right border.

Page 10, Line 17, replace the paragraph beginning there with the following:

8. The key "M" 37 has a generally "L" shaped ridge applied to the bottom border and to the left border (similar to as shown in FIG. 2D). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower left corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the bottom border and one on the left border.

Page 10, Line 25, replace the paragraph beginning there with the following:

9. The key "/" 38 has a generally "L" shaped ridge applied to the bottom border and to the right border (similar to as shown in FIG. 2C). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower right corner of the same imaginary rectangular box 35

described in 6 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the bottom border and one on the right border.

Page 13, Line 3, replace the paragraph beginning there with the following:

It can also be seen that the modifications described in number 5 and 6 above, can be used, if desired, to modify the keys "1", "4", "7", "0" 48 of the row 16 of the QWERTY keyboard 10 of FIG.1 one obtains similar locational feel and feedback.

IN THE CLAIMS :

Please amend claims 1, 5, 6, and 8 as follows:

1. (Amended) A key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configuration so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

a ridge adjacent said top edge portion or said bottom edge portion and extending longitudinally generally parallel thereto; and

a ridge on said left or said right edge portion.

5. (Amended) The keyboard or keypad of claim 3 wherein any key between said top left end key and said right top end key has a ridge adjacent the top edge portion thereof extending generally parallel to the rows, and any key between said bottom left end key and said right bottom end key includes a ridge adjacent the bottom edge portion thereof extending generally parallel to the rows.

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6. (Amended) A Qwerty keyboard having a plurality of alphanumeric keys arranged in three linear rows including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right side edge portions extending generally normal to the rows, the keys being positioned in a left first set and a right second set, the first set including the three left end keys and at least the next two or three adjacent keys of each row, the second set including the three right end keys and the next adjacent two or three keys spaced toward the first set so that the two sets are spaced by two, three or four keys, and wherein the keys of said first set include:

(i) a ridge on the top left end key adjacent the upper edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom left end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,



(viii) a ridge on said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(x) a ridge on the top key next adjacent said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

(xii) a ridge on the or each top key between said last mentioned key and said top left end key adjacent the top edge portion thereof extending generally parallel to the rows, and

the keys of said second set include:

(i) a ridge on the top right end key adjacent the upper edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle key adjacent said top right key adjacent the right edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom right end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge

- portion thereof extending generally parallel to the rows,
- (viii) a ridge on said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
  - (ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
  - (x) a ridge on the top key next adjacent said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
  - (xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,
  - (xii) a ridge on the or each top key between said last mentioned key and said top right end key adjacent the top edge portion thereof extending generally parallel to the rows.

8. The Qwerty keyboard of claim 6 wherein the two ridges of each end key meet.

Please add new claims 9-10 as follows:

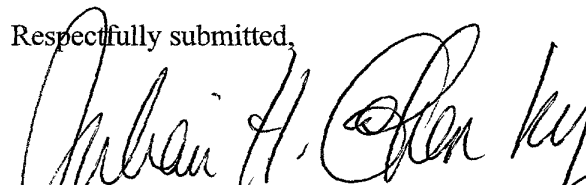
9. (New) The keyboard or keypad of claim 4 wherein any key between said top left end key and said right top end key has a ridge adjacent the top edge portion thereof extending generally parallel to the rows, and any key between said bottom left end key and said right bottom end key includes a ridge adjacent the bottom edge portion thereof extending generally parallel to the rows.

10. (New) The Qwerty keyboard of claim 7 wherein the two ridges of each end key meet.

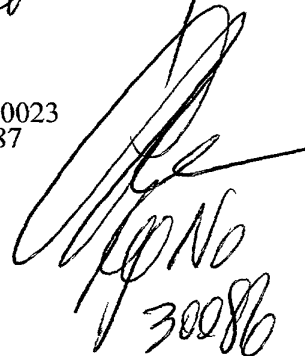
Remarks

The above amendatory action is taken solely for the purpose of avoiding claim fees that would otherwise accrue due to the presence of multiple dependent claims.

Respectfully submitted,



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FOOTNOTES

## MARKED UP COPY

### IN THE SPECIFICATION

A substantial number of modern electronic devices are equipped with a keyboard or keypad of some sort for manually inputting commands into the devices. The most common form of keyboard is that of the common household and business PC keyboard and the most common form of keypad is that of a [mobile] phone.

Untrained keyboard operators use what is called the "hunt and peck" system. Usually they use only their two forefingers or at most their four best fingers, the forefingers and middle fingers. This method requires that the typist keeps their eyes on the keyboard and this affects productivity. Although some of these typists can type about as fast as touch typists, very fast hunt and peck typing is more tiring than for the touch typist because the hands have to leap all around the keyboard to reach all the keys with only two or four fingers. In summary, to "keyboard" correctly, the typist must use the touch typing method described above. There is no middle ground in proper typing; if the typist is not typing correctly, he is typing incorrectly. Similar problems arise in the use of keypads.

There is disclosed herein a key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configuration[s] so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

- (vii) a ridge on the next adjacent or next two adjacent keys to said bottom left end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

The keys of the standard keyboard 10 are generally identical in shape and size, except for the outer function and modifier keys which are usually horizontally elongated in order to give the complete standard keyboard a generally rectangular appearance. A normal key includes an upper finger engaging surface 2 of a generally square or rectangular configuration having a top edge portion 3 remote from a user, a bottom [button] edge portion 4 adjacent a user, a left edge portion 5 and a right edge portion 6. [A ridge 22 is located on at least one of the edges.]

The standard keyboard generally consists of a main alphanumeric body of at least three, but usually five, parallel, horizontal rows of keys (FIG. 1). At [The at] least three rows could consist of a top row remote from a user, a middle row and a bottom row adjacent a user, the rows generally consisting of a series of alphanumeric keys followed by a series of function keys. For example, in Figure 1, each of the three middle rows 12, 13, 14 include a sequence of alphabetical and grammatical characters (such as the QWERTY or Dvorak sequence), bordered on the end of each row by modifier or function keys of some sort. That is, row 12 remote from the user has its alphanumeric keys starting with Q on the far left edge and finishing with P on the far right edge. Row 13 is an intermediate row and has its alphanumeric keys starting with A on the far left edge and finishing with L on the far right edge. Similarly, row 14 being adjacent a user has its alphanumeric keys starting with Z on the far left edge and finishing with M on the far right.

The foundation of the improved keyboard 20 the subject of at least a preferred embodiment of this invention, one variation of which is shown in FIG. 3, is the idea of providing certain keys with the means of generating a specific feedback. The feedback differs according to the position of the key and is such that the feedback of certain keys together, creates a virtual "box" within which the fingers can travel. In other words, the keys are so modified that a "wall"

is created, which wall the fingers sense and within which wall they are guided (and almost forced) to operate. Therefore, not only the specific design of the keys gives the [that] typist the exact feel for where the finger is, but also the keys are [key is] so modified that they almost “force” the typist to stay within the “walls” that the modifications have created.

2. The key “R” 24 has a generally “L” shaped ridge 25 applied to the top border and to the right border (FIG. 2B). The ridge 25 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the “L” shaped ridge could be formed by two separate ridges, one on the top border and one on the right [left] border.
3. The key “V” 26 has a generally “L” shaped ridge 27 applied to the bottom border and to the right border (FIG. 2C). The ridge 27 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the “L” shaped ridge could be formed by two separate ridges, one on the bottom [top] border and one on the right [left] border.
4. The key “Z” 28 has a generally “L” shaped ridge 29 applied to the bottom border and to the left border (FIG. 2D). The ridge 29 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower left [right] corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the “L” shaped ridge could be formed by

two separate ridges, one on the bottom [top] border and one on the left border.

5. The keys “A” 30 and “F” 31 each have one ridge 32, 33 applied to the left border in the case of the [home] key “A” 30 and to the right border in the case of the home key “F” 31 (FIG. 2E and FIG. 2F). These ridges 32, 33 are designed so that they provide the two fingers designated to use these keys with the feedback information that the fingers are in a “middle” row since the feedback is that of a lateral ridge without a corner. In other words, the finger senses that it is not in a “corner” position.
7. The key “P” 36 has a generally “L” shaped ridge applied to the top border and to the right border (similar to as shown in FIG. 2B). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the upper right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the “L” shaped ridge could be formed by two separate ridges, one on the top border and one on the right [left] border.
8. The key “M” 37 has a generally “L” shaped ridge applied to the bottom border and to the left border (similar to as shown in FIG. 2D). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower left [right] corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the “L” shaped ridge could be formed by two separate ridges, one on the bottom [top] border and one on the left border.

9. The key “/” 38 has a generally “L” shaped ridge applied to the bottom border and to the right border (similar to as shown in FIG. 2C). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the “L” shaped ridge could be formed by two separate ridges, one on the bottom [top] border and one on the right [left] border.

It can also be seen that the modifications described in number 5 [4] and 6 above, can be used, if desired, to modify the keys “1”, “4”, “7”, “0” 48 of the row 16 of the QWERTY keyboard 10 of FIG.1 one obtains similar locational feel and feedback.

#### IN THE CLAIMS

1. (Amended) A key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configuration[s] so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

a ridge adjacent said top edge portion or said bottom edge portion and extending longitudinally generally parallel thereto; and

a ridge on said left or said right edge portion.

5. (Amended) The keyboard or keypad of claim 3 [or 4] wherein any key between said top left end key and said right top end key has a ridge adjacent the top edge portion thereof extending generally parallel to the rows, and any key between said bottom left end key and said right bottom end key includes a ridge adjacent the bottom edge portion thereof extending generally parallel to the rows.



6. (Amended) A Qwerty keyboard having a plurality of alphanumeric keys arranged in three linear rows including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right side edge portions extending generally normal to the rows, the keys being positioned in a left first set and a right second set, the first set including the three left end keys and at least the next two or three adjacent keys of each row, the second set including the three right end keys and the next adjacent two or three keys spaced toward the first set so that the two sets are spaced by two, three or four keys, and wherein the keys of said first set include:

thereof extending generally normal to the rows,

(i) a ridge on the top left end key adjacent the upper edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom left end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof

extending generally parallel to the rows,

(viii) a ridge on said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(x) a ridge on the top key next adjacent said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

(xii) a ridge on the or each top key between said last mentioned key and said top left end key adjacent the top edge portion thereof extending generally parallel to the rows, and the keys of said second set include:

- (i) a ridge on the top right end key adjacent the upper edge portion thereof extending generally parallel to the rows,
- (ii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows,
- (iii) a ridge on the middle key adjacent said top right key adjacent the right edge portion thereof extending generally normal to the rows,
- (iv) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,
- (v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,
- (vi) a ridge on the next adjacent or next two adjacent keys to said bottom right end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

- (vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,
- (viii) a ridge on said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
- (ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
- (x) a ridge on the top key next adjacent said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,
- (xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,
- (xii) a ridge on the or each top key between said last mentioned key and said top right end key adjacent the top edge portion thereof extending generally parallel to the rows.

8. (Amended) The Qwerty keyboard of claim 6 [or 7] wherein the two ridges of each end key meet.

Attorney's Docket No. U 013592-8

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

☐ In re application of: Alberto B. SABATO  
 Serial No.: 09/ 913,105 Group No.  
 Filed: August 9, 2001 Examiner:  
 For: A LOCATING KEY FOR A KEYBOARD OR KEYPAD

☐ Patent No.: \_\_\_\_\_ Issued: \_\_\_\_\_

\* NOTE: Insert name(s) of inventor(s) and title also for patent. Where statement is with respect to a maintenance fee payment also insert application serial number and filing date and add Box M. Fee to address.

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
 STATUS (37 CFR 1.9(c-f) and 1.27(b-d))**

With respect to the invention described in

- ☒ the specification filed herewith  
☒ application serial no. 09/ 913,105 , filed August 9, 2001  
☐ PCT International Application No. \_\_\_\_\_ , filed \_\_\_\_\_  
☐ Patent no. \_\_\_\_\_ , issued \_\_\_\_\_

**I. IDENTIFICATION OF DECLARANT AND RIGHTS AS A SMALL ENTITY**

I hereby declare that I am

*(complete either (a), (b), (c) or (d) below):*

**(a) Independent Inventor**

- ☒ a belownamed independent inventor and that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying fees under Section 41 (a) and (b) of Title 35, United States to the Patent and Trademark Office

**(b) Non-inventor Supporting a Claim By Another**

- ☐ Making this verified statement to support a claim by

\_\_\_\_\_ for a small entity status for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code and I hereby declare that I would qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under 41(a) and (b) of Title 35, United States Code, if I had made the above identified invention.

**(c) Small Business Concern**

- ☐ the owner of the small business concern identified below:  
☐ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN \_\_\_\_\_

ADDRESS OF CONCERN \_\_\_\_\_

\_\_\_\_\_ and  
 (Verified Statement (Declaration) Claiming Small Entity Status (37 CFR 1.9 (c-f) and 1.27(b-d)) [7-10] - page 1 of 4)

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that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of the Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For the purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

(d) Non-Profit Organization

- ☐ an official empowered to act on behalf of the nonprofit organization identified below:

NAME OF ORGANIZATION \_\_\_\_\_

ADDRESS OF ORGANIZATION \_\_\_\_\_

TYPE OF ORGANIZATION

- ☐ UNIVERSITY OR OTHER INSTITUTION OF HIGHER EDUCATION
- ☐ TAX EXEMPT UNDER INTERNAL REVENUE SERVICE CODE (26 USC 501(a) AND 501(c) (3))
- ☐ NONPROFIT SCIENTIFIC OR EDUCATIONAL UNDER STATUTE OF STATE OF THE UNITED STATES OF AMERICA

(NAME OF STATE \_\_\_\_\_)

(CITATION OF STATUTE \_\_\_\_\_)

- ☐ WOULD QUALIFY AS TAX EXEMPT UNDER INTERNAL REVENUE SERVICE CODE (26 USC 501(a) AND 501(c) (3)) IF LOCATED IN THE UNITED STATES OF AMERICA
- ☐ WOULD QUALIFY AS NONPROFIT SCIENTIFIC OR EDUCATIONAL UNDER STATUTE OF STATE OF THE UNITED STATES OF AMERICA IF LOCATED IN THE UNITED STATES OF AMERICA

(NAME OF STATE \_\_\_\_\_)

(CITATION OF STATUTE \_\_\_\_\_)

and that the nonprofit organization identified above qualifies as a nonprofit organization as defined in 37 CFR 1.9(e) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code.

**II. OWNERSHIP OF INVENTION BY DECLARANT**

I hereby declare that rights under contract or law remain with and/or have been conveyed to the above identified

- ☐ person ☐ concern ☐ organization  
(item (a) or (b) above) (item (c) above) (item (d) above)

(Verified Statement (Declaration) Claiming Small Entity Status (37 CFR 1.9 (c-f) and 1.27(b-d)) [7-10] - page 2 of 4)

EXCEPT, that if rights held are not exclusive, each individual, concern or organization having rights to the invention is listed below\* and no rights to the invention are held (1) by any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, (2) any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or (3) a non-profit organization under 37 CFR 1.9(e)

- ☒ no such person, concern or organization
- ☐ person, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

### III. ACKNOWLEDGEMENT OF DUTY TO NOTIFY PTO OF STATUS CHANGE

I acknowledge the duty to file, in this application, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

### IV. DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

### V. SIGNATURES

(complete only (e) or (f) below)

(e)

NOTE: All inventors must sign the verified statement.

ALBERTO B SABATO

Date: 09-Aug-2001

Name of Inventor

Alberto B Sabato

Signature of Inventor

(Verified Statement (Declaration) Claiming Small Entity Status (37 CFR 1.9 (c-f) and 1.27(b-d)) [7-10] -3 of 4)

\_\_\_\_\_  
Name of Inventor

Date: \_\_\_\_\_

\_\_\_\_\_  
Signature of Inventor

\_\_\_\_\_  
Name of Inventor

Date: \_\_\_\_\_

\_\_\_\_\_  
Signature of Inventor

*(add lines for any additional inventors who must sign)*

or

(f)

NOTE: The title of the person signing on behalf of a concern or non-profit organization should be specified.

NAME OF PERSON SIGNING \_\_\_\_\_

TITLE OF PERSON \_\_\_\_\_  
(if signing on behalf of a concern or non-profit organization)

ADDRESS OF PERSON SIGNING \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

(Verified Statement (Declaration) Claiming Small Entity Status (37 CFR 1.9 (c-f) and  
1.27(b-d)) [7-10] -4 of 4)

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## A LOCATING KEY FOR A KEYBOARD OR KEYPAD

### Field of the Invention

The present invention relates to keys on a keyboard or keypad. More particularly, though not exclusively, the invention relates to locating keys for a computer or electronic keyboard or keypad which improves keyboard/keypad operating skills.

### Background of the Invention

A substantial number of modern electronic devices are equipped with a keyboard or keypad of some sort for manually inputting commands into the devices. The most common form of keyboard is that of the common household and business PC keyboard and the most common form of keypad is that of a mobile phone.

Referring to the keyboard, the most widely recommended method of input using one of the common keyboards is the "touch typing" method. This method simply trains a user to memorise the keyboard layout so thoroughly that they may type using all their fingers without looking at the keyboard. This method is achieved by constant practice and assigning each finger to a particular group of keys.

In particular, the "touch typing" method places each respective finger lightly on a "home" key, for example, in the "qwerty" keyboard these home keys are "asdf" and "jkl," from left to right. The thumbs are then placed over the space bar. Each finger rests lightly on its home key and does not move unless it reaches to strike keys immediately above or below the home key or in the case of each of the index fingers, the keys immediately to the side of the home key, then the finger quickly returns to its home key. Thus, each finger has only certain keys that it should strike.

Untrained keyboard operators use what is called the "hunt and peck" system. Usually they use only their two forefingers or at most their four best fingers, the forefinger and middle fingers. This method requires that the typist keeps their eyes on the keyboard and this affects productivity. Although some of these typists can type about as fast as touch typists, very fast hunt and peck typing is more tiring than for the touch typist because the hands have to leap all around the keyboard to reach all the keys with only two or four fingers. In summary, to "keyboard" correctly, the typist must use the



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touch typing method described above. There is no middle ground in proper typing; if the typist is not typing correctly, he is typing incorrectly. Similar problems arise in the use of keypads.

In an attempt to overcome the shortcomings of some of the prior art, many alternate shaped keyboards have been developed. One such keyboard is the KINESIS keyboard (for example, US 6,005,496 to Hargreaves, et al) which describes a keyboard having two wells for the receipt of the right and left hands of a user. The advantage of such a keyboard is that the location of the wells allows a user's arms to extend straight out in front of the user thereby reducing the need for the user to move his or her hands along the keyboard. However, these types of keyboards are complicated to operate and rely on the user to memorise key combinations and macros.

Many other patterns such as US 1,823,130; US 3,396,827; US 3,848,723; US 5,515,763 and US 4,180,336, for example, describe keys for keyboards having top surfaces including longitudinal ridges, slots, rows of ridges, knobs, craters and texturing. Various combinations of texturing are also known.

Therefore, there still remains a need in the art for a keyboard and keypad that "forces" a typist to touch type correctly thus reducing typing inaccuracies and so minimising strain and effort

#### Object of the Invention

It is an object of the present invention to overcome or ameliorate some of the disadvantages of the prior art, or at least to provide a useful alternative.

#### Summary of the Invention

There is disclosed herein a key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configurations so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

a ridge adjacent said top edge portion or said bottom edge portion and extending longitudinally generally parallel thereto; and

a ridge on said left or said right edge portion.

There is further disclosed herein a keyboard or keypad including at least three rows of keys including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having at least three keys including a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right edge portions extending generally normal to the rows, and wherein the keys include:

- (i) a ridge on the top left end key adjacent the top edge portion thereof extending generally parallel to the rows,
- 10 (ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,
- (iii) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,
- (iv) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,
- 15 (v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,
- (vi) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,
- 20 (vii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows, and
- (viii) a ridge on the top right end key adjacent the top edge portion thereof extending generally parallel to the rows.

There is still further disclosed herein a Qwerty keyboard having a plurality of alphanumeric keys arranged in three linear rows including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right side edge portions extending generally normal to the rows, the keys being positioned in a left first set and a right second set, the

first set including the three left end keys and at least the next two adjacent keys of each row, the second set including the three right end keys and the next adjacent two or three keys spaced toward the first set so that the two sets are spaced by two, three or four keys, and wherein the keys of said first set include:

(i) a ridge on the top left end key adjacent the top edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle left end key adjacent the left edge portion thereof  
10 extending generally normal to the rows,

(iv) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom left  
15 end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(viii) a ridge on said last mentioned key adjacent the right edge portion thereof  
20 extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(x) a ridge on the top key next adjacent said last mentioned key adjacent the  
25 right edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

(xii) a ridge on the or each top key between said last mentioned key and said top left end key adjacent the top edge portion thereof extending generally parallel to the rows, and

the keys of said second set include:

(i) a ridge on the top right end key adjacent the top edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle key adjacent said top right key adjacent the right edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom right end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(viii) a ridge on said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

(x) a ridge on the top key next adjacent said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

(xii) a ridge on the or each top key between said last mentioned key and said top right end key adjacent the top edge portion thereof extending generally parallel to the rows.

#### Brief Description of the Drawings

A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a typical standard QWERTY keyboard.

Fig 2A through 2H are schematic diagrams showing how certain keys of the QWERTY keyboard are modified in order to provide a positive feedback according to the present invention.

FIG. 3 is a perspective view of an improved QWERTY keyboard made in accordance with the present invention.

#### Description of an Embodiment of the Preferred Invention

The improved keyboard is the result of specific modifications to an original standard keyboard. This original keyboard 10 is in common use, and an example is illustrated in FIG. 1. For clarity, the generally accepted geometrical design of the standard keyboard will first be described in order to provide a foundation for understanding the geometry of the improved keyboard. However, while the modifications of the present invention are most likely to be applied to the standard keyboard, it must be noted that these same modifications may be applied to many other keyboard designs as well.

The keys of the standard keyboard 10 are generally identical in shape and size except for the outer function and modifier keys which are usually horizontally elongated in order to give the complete standard keyboard a generally rectangular appearance. A normal key includes an upper finger engaging surface 2 of a generally square or rectangular configuration having a top edge portion 3 remote from a user, a bottom edge portion 4 adjacent a user, a left edge portion 5 and a right edge portion 6. A ridge 22 is located on at least one of the edges.

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The standard keyboard generally consists of a main alphanumeric body of at least three, but usually five, parallel, horizontal rows of keys (FIG. 1). The at least three rows could consist of a top row remote from a user, a middle row and a bottom row adjacent a user, the rows generally consisting of a series of alphanumeric keys followed by a series of function keys. For example, in Figure 1, each of the three middle rows 12, 13, 14 include a sequence of alphabetical and grammatical characters (such as the QWERTY or Dvorak sequence), bordered on the end of each row by modifier or function keys of some sort. That is, row 12 remote from the user has its alphanumeric keys starting with Q on the far left edge and finishing with P on the far right edge. Row 13 is an intermediate row and has its alphanumeric keys starting with A on the far left edge and finishing with L on the far right edge. Similarly, row 14 being adjacent a user has its alphanumeric keys starting with Z on the far left edge and finishing with M on the far right.

The lowest row of keys 24, positioned closest to the typist (i.e., adjacent the user) and immediately under the lower of the middle three main rows 14, is generally made up of modifier or function keys on either end of a long spacebar 15. The second highest row of keys 16, positioned above the upper of the middle three main rows 12, is generally made up mainly of numerical keys. The highest row 11 (remote from the user) is normally made up of function keys.

While the horizontal rows 16, 12, 13, 14, 24 of the standard keyboard are usually aligned without deviation, the vertical alignment of the keys is usually staggered, and it is this specific juxtaposition of horizontal and vertical key relationships which make up the geometry of the standard keyboard 10 (FIG. 1). In particular, the reference for the vertical alignment shift is generally the home row, or middle row 13. The row 14 immediately beneath the home row, generally the lower alphabetical row, is usually organised in such a way that the keys of this row have their midpoints oriented in vertical alignment with or near the space between the keys of the home row 13. The row 12 immediately above the home row 13, generally the upper alphabetical row, is usually organised in such a way that the keys of this row have their midpoints oriented in vertical alignment with or near the left one third vertical divider of the keys of the home row 13. Finally, the row 16 immediately above the upper alphabetical row 12, which is the row above the home row 13, is usually organised in such a way that the keys of this row 16

have their midpoints oriented in vertical alignment with or near the space between the keys of the row 12 immediately beneath them.

This general key relationship is the essence of what is usually referred to as the standard keyboard geometry (FIG. 1). While the specific organisation of the alphanumeric characters assigned to the keys of such a keyboard may vary, this does not affect the geometrical description of the keyboard 10, or its applicability to the modifications of the improved keyboard.

The foundation of the improved keyboard 20 the subject of at least a preferred embodiment of this invention, one variation of which is shown in FIG. 3, is the idea of providing certain keys with the means of generating a specific feedback. The feedback differs according to the position of the key and is such that the feedback of certain keys together, creates a virtual "box" within which the fingers can travel. In other words, the keys are so modified that a "wall" is created, which wall the fingers sense and within which wall they are guided (and almost forced) to operate. Therefore, not only the specific design of the keys gives that typist the exact feel for where the finger is, but also the key is so modified that they almost "force" the typist to stay within the "walls" that the modifications have created.

This in turn facilitates (and almost forces) the use of specific fingers on specific keys and eventually makes a typist proficient in the use of the correct fingers and thus proficient in touch typing.

In the embodiment described here, the following keys of the standard QWERTY keyboard have been modified:

1. The key "Q" 21 has a generally "L" shaped ridge 22 applied to the top border and to the left border (FIG. 2A). The ridge 22 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper left corner of an imaginary rectangular box 23 formed by the keys Q, W, E, R, F, V, C, X, Z, A. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.

2. The key "R" 24 has a generally "L" shaped ridge 25 applied to the top border and to the right border (FIG. 2B). The ridge 25 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
3. The key "V" 26 has a generally "L" shaped ridge 27 applied to the bottom border and to the right border (FIG. 2C). The ridge 27 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
4. The key "Z" 28 has a generally "L" shaped ridge 29 applied to the bottom border and to the left border (FIG. 2D). The ridge 29 is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower right corner of the same imaginary rectangular box 23 described in 1 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
5. The keys "A" 30 and "F" 31 each have one ridge 32, 33 applied to the left border in the case of the home key "A" 30 and to the right border in the case of the key "F" 31 (FIG. 2E and FIG. 2F). These ridges 32, 33 are designed so that they provide the two fingers designated to use these keys with the feedback information that the fingers are in a "middle" row since the feedback is that of a lateral ridge without a corner. In other words, the finger senses that it is not in a "corner" position.



6. The key "U" 34 has a generally "L" shaped ridge applied to the top border and to the left border (similar to as shown in FIG. 2A). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the upper left corner of an imaginary rectangular box 35 formed by the keys U, I, O, P, ,, /, >, <, M, J. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
7. The key "P" 36 has a generally "L" shaped ridge applied to the top border and to the right border (similar to as shown in FIG. 2B). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the upper right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
8. The key "M" 37 has a generally "L" shaped ridge applied to the bottom border and to the left border (similar to as shown in FIG. 2D). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the "L" shaped ridge could be formed by two separate ridges, one on the top border and one on the left border.
9. The key "J" 38 has a generally "L" shaped ridge applied to the bottom border and to the right border (similar to as shown in FIG. 2C). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard namely, the lower right corner of the same imaginary rectangular box 35 described in 6 above. It should be noted, however, that the "L" shaped

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ridge could be formed by two separate ridges, one on the top border and one on the left border.

10. The keys "J" 39 and ";" 40 each have one ridge applied to the left border in the case of the home key "J" 39 and to the right border in the case of the key ";" 40 (similar to as shown in FIG. 2E and FIG. 2F). These ridges are designed so that they provide the two fingers designated to use these keys with the feedback information that the fingers are in the middle row of the same imaginary rectangular box 35 described in 6 above.

In the same manner the numerical keys QWERTY keyboard 10 shown in FIG. 1, have been modified so that they provide the same positive feedback information and the fingers can operate within a "box" 41 formed by "walls" applied to the keys "7", "8", "9", "4", "6", "1", "2 and 3". It can be seen that the modifications are identical to those for similarly positioned keys of the alphabetical portion of the keyboard 20, except for keys "8" 42 and "2" 43, thus:

1. The key "7" has a generally "L" shaped ridge applied to the top and to the left border (similar to as shown in FIG. 2A). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper left corner of an imaginary rectangular box 41 formed by the keys 7, 8, 9, 6, 5, 2, 1, 4.
2. The key "9" has a generally "L" shaped ridge applied to the top border and to the right border (similar to as shown in FIG. 2B). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the upper right corner of the same imaginary rectangular box 41 described in 1 above.
3. The key "3" has a generally "L" shaped ridge applied to the bottom border and to the right border (similar to as shown in FIG. 2C). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20

namely, the lower right corner of the same imaginary rectangular box 41 described in 1 above.

4. The key "1" has a generally "L" shaped ridge applied to the bottom border and to the left border (similar to as shown in FIG. 2D). The ridge is designed so that it will provide a finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the lower left corner of the same imaginary rectangular box 41 described in 1 above.
5. The key "4" has one ridge applied to the left border (similar as shown in FIG. 2E) which ridge is so designed so that it provides the finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the left middle edge of the same imaginary rectangular box 41 described in 1 above.
6. The key "6" has one ridge applied to the right border (similar as shown in FIG. 2F) which ridge is so designed so that it provides the finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the right middle edge of the same imaginary rectangular box 41 described in 1 above.
7. The key "8" 42 has one ridge 44 applied in the top border (similar as shown in FIG. 2G) which ridge is so designed so that it provides the finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the top middle edge of the same imaginary rectangular box 41 described in 1 above.
8. The key "2" 43 has one ridge 45 applied to the bottom border (similar as shown in FIG 2H) which ridge is so designed so that it provides the finger with the feedback information that it has reached a specific position on the keyboard 20 namely, the bottom middle edge of the same imaginary rectangular box 41 described in 1 above.

It can be seen that the identical modifications described above can be used if desired to modify the directional keys 46 used to move the cursor around the screen of a computer and which are known as the "inverted T", or similarly the functional keys 47

("Insert", "Home", "PageUp", "Delete", "End", "PageDown"), to obtain similar locational feel and feedback.

It can also be seen that the modifications described in number 4 and 6 above, can be used, if desired, to modify the keys "1", "4", "7", "0" 48 of the row 16 of the QWERTY keyboard 10 of FIG.1 one obtains similar locational feel and feedback.

Further keys of the QWERTY keyboard or similar keyboards could be modified such that the keys corresponding to "W", "E", "T", "O", all have a ridge applied to the top of the respective key similar to the ridge of the key "X" as described in number 7 above. Similarly, keys "X", "C", "<", ">", could also each respectively have a ridge applied to the bottom of each respective key similar to the ridges of key "2" as described in number 8 above. In this way, a more defined "box" is obtained within which the fingers of the left or right hand are obliged to move.

It can therefore also be seen that a key having a ridge on a top or bottom border provides a geometric indicator stimulating the user as to the location of the finger within the respective box. This also indicates whether the user's finger is parallel or normal to a particular row.

While the above description contains many specificities, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of one preferred embodiment thereof. For example, different standard keyboards can be similarly modified. Additionally, the "walls" on the keys can be of different height, thickness, shape and appearance and still activate the feedback which is the subject of this invention. Additionally, this invention may be applied to keyboards or keypads molded to curved surfaces such as the "Microsoft Natural Keyboard" and equivalent keyboards, or using non-alphanumeric keys or designations, clustering capabilities, single or multiple-hand designs, or miniaturization. Additionally, the invention may be applied to keypads used on telephones, calculators, cash registers, electrical appliances and other electronic devices. The keys may be integral with the keypad or the ridges can be formed of plastic material with a self-adhesive backing for attachment to keys of a "normal" keyboard or keypad.

Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

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## CLAIMS

1. A key for a keyboard or keypad, said key having an upper finger engaged surface of generally square or rectangular configurations so as to have a top edge portion remote from a user, a bottom edge portion adjacent the user, a left edge portion and a right edge portion, said key further having:

a ridge adjacent said top edge portion or said bottom edge portion and extending longitudinally generally parallel thereto; and

a ridge on said left or said right edge portion.

2. The key of claim 1 wherein the ridges are joined so as to provide an "L" shaped configuration.

3. A keyboard or keypad including at least three rows of keys including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having at least three keys including a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right edge portions extending generally normal to the rows, and wherein the keys include:

(i) a ridge on the top left end key adjacent the top edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iii) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,

(vii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows, and

(viii) a ridge on the top right end key adjacent the top edge portion thereof extending generally parallel to the rows.

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4. The keyboard or keypad of claim 3 wherein any key between said top left end key and said bottom left end key has a ridge adjacent the left edge portion thereof extending generally normal to the rows, and any key between said top right end key and said bottom right end key has a ridge adjacent the right edge portion thereof extending generally normal to the rows.

5. The keyboard or keypad of claim 3 or 4 wherein any key between said top left end key and said right top end key has a ridge adjacent the top edge portion thereof extending generally parallel to the rows, and any key between said bottom left end key and said right bottom end key includes a ridge adjacent the bottom edge portion thereof extending generally parallel to the rows.

6. A Qwerty keyboard having a plurality of alphanumeric keys arranged in three linear rows including a top row which is remote from a user, a middle row, and a bottom row which is adjacent the user, each row having a left and a right end key, each key having an upper finger engaged surface of generally square or rectangular configuration so as to have top and bottom edge portions extending generally parallel to the rows, and left and right side edge portions extending generally normal to the rows, the keys being positioned in a left first set and a right second set, the first set including the three left end keys and at least the next two adjacent keys of each row, the second set including the three right end keys and the next adjacent two or three keys spaced toward the first set so that the two sets are spaced by two, three or four keys, and wherein the keys of said first set include:

(i) a ridge on the top left end key adjacent the top edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle left end key adjacent the left edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom left end key adjacent the left edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom left end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom left end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(viii) a ridge on said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(x) a ridge on the top key next adjacent said last mentioned key adjacent the right edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

(xii) a ridge on the or each top key between said last mentioned key and said top left end key adjacent the top edge portion thereof extending generally parallel to the rows, and

the keys of said second set include:

(i) a ridge on the top right end key adjacent the top edge portion thereof extending generally parallel to the rows,

(ii) a ridge on the top right end key adjacent the right edge portion thereof extending generally normal to the rows,

(iii) a ridge on the middle key adjacent said top right key adjacent the right edge portion thereof extending generally normal to the rows,

(iv) a ridge on the bottom right end key adjacent the right edge portion thereof extending generally normal to the rows,

(v) a ridge on the bottom right end key adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vi) a ridge on the next adjacent or next two adjacent keys to said bottom right end key of the bottom row adjacent the bottom edge portion thereof extending generally parallel to the rows,

(vii) a ridge on the next adjacent bottom key adjacent the bottom edge portion thereof extending generally parallel to the rows,



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(viii) a ridge on said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

(ix) a ridge on the middle key next adjacent to said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

5 (x) a ridge on the top key next adjacent said last mentioned key adjacent the left edge portion thereof extending generally normal to the rows,

(xi) a ridge on said last mentioned key adjacent the top edge portion thereof extending generally parallel to the rows,

10 (xii) a ridge on the or each top key between said last mentioned key and said top right end key adjacent the top edge portion thereof extending generally parallel to the rows

7. The Qwerty keyboard of claim 6 wherein each set includes four keys from each row so that the two sets are spaced by two keys in each row

5 8. The Qwerty keyboard of claim 6 or 7 wherein the two ridges of each end key meet.

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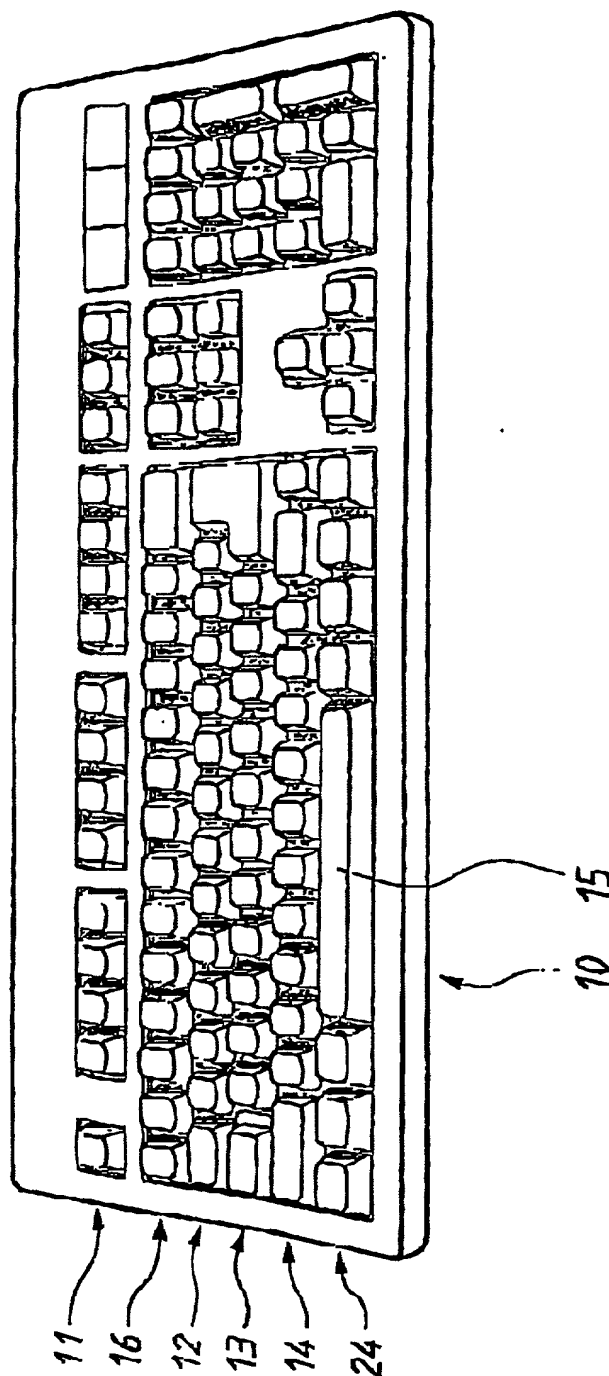


FIG. 1

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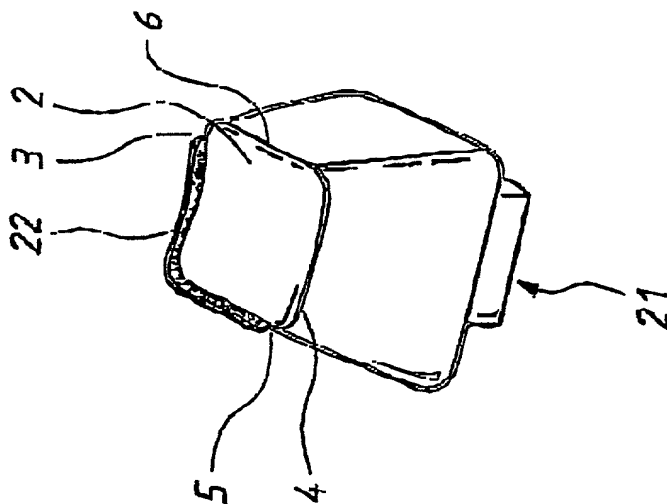
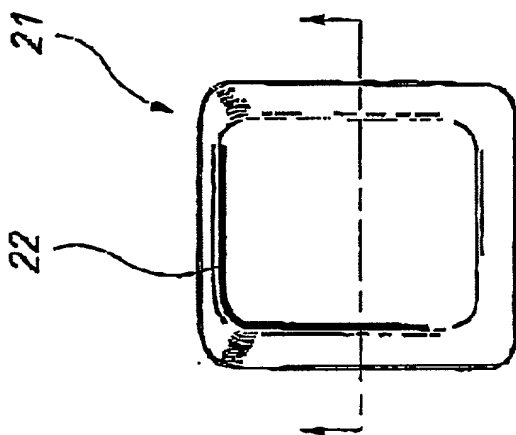
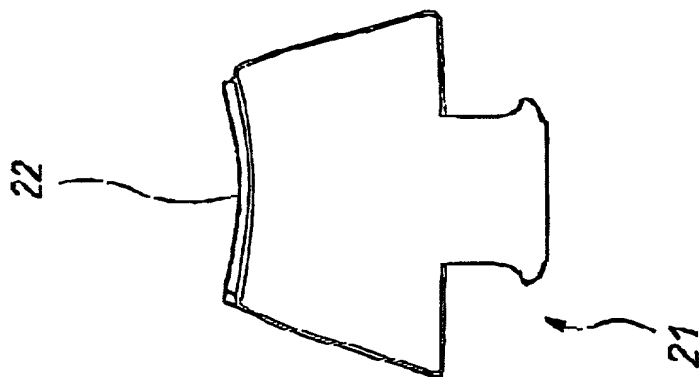


FIG. 2A

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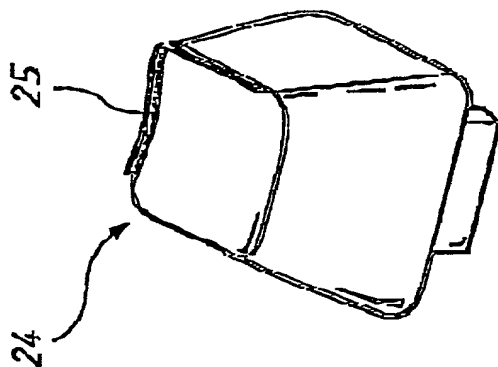
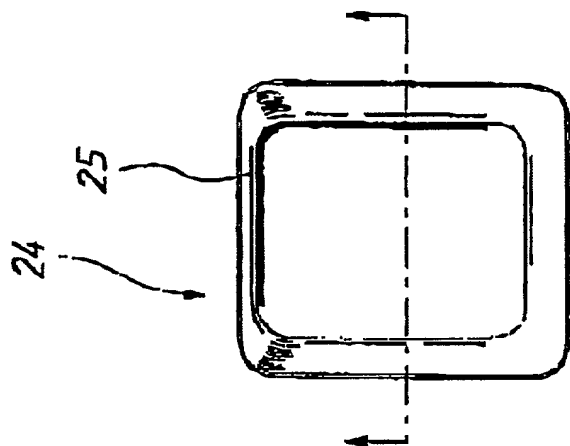
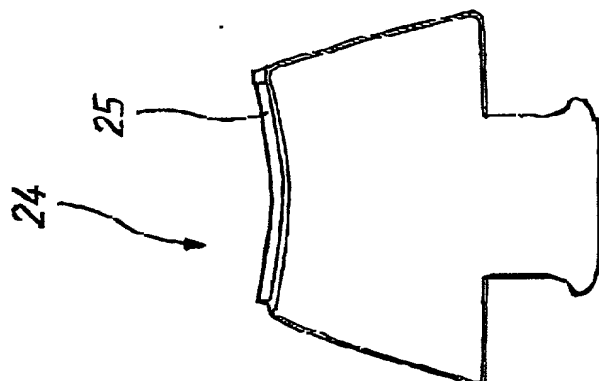
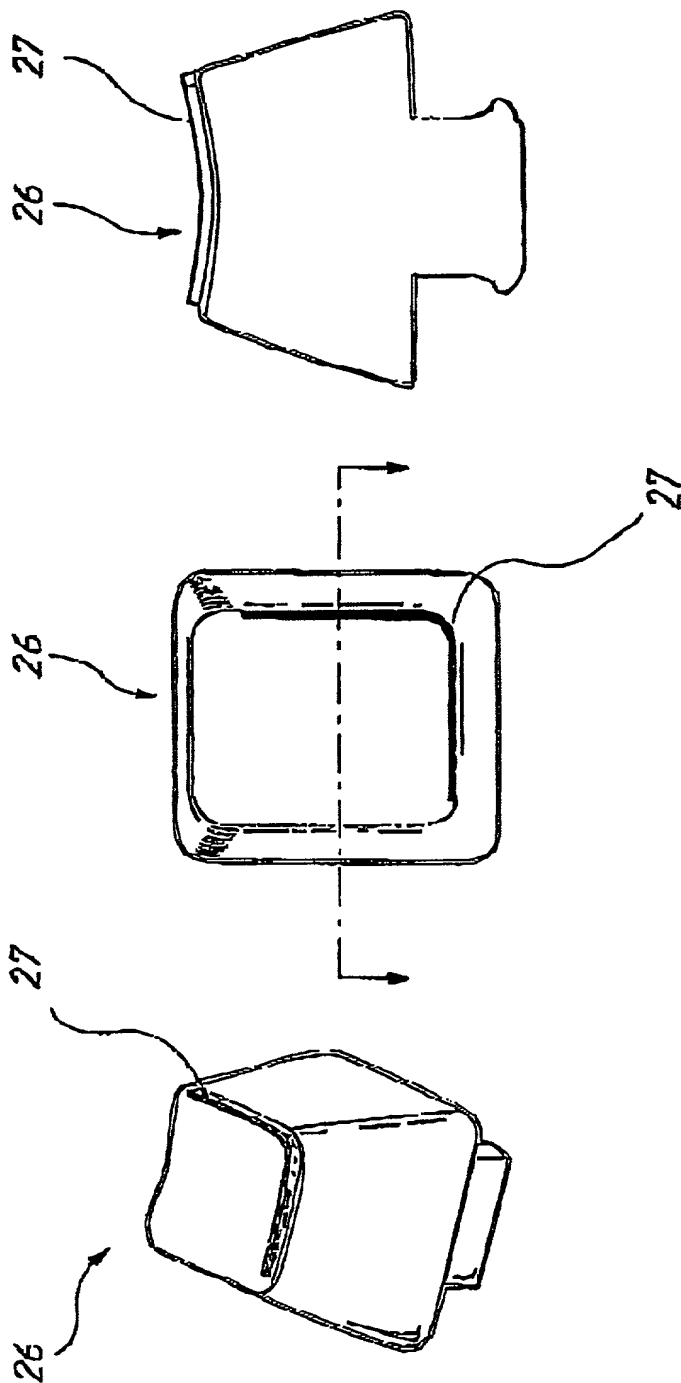


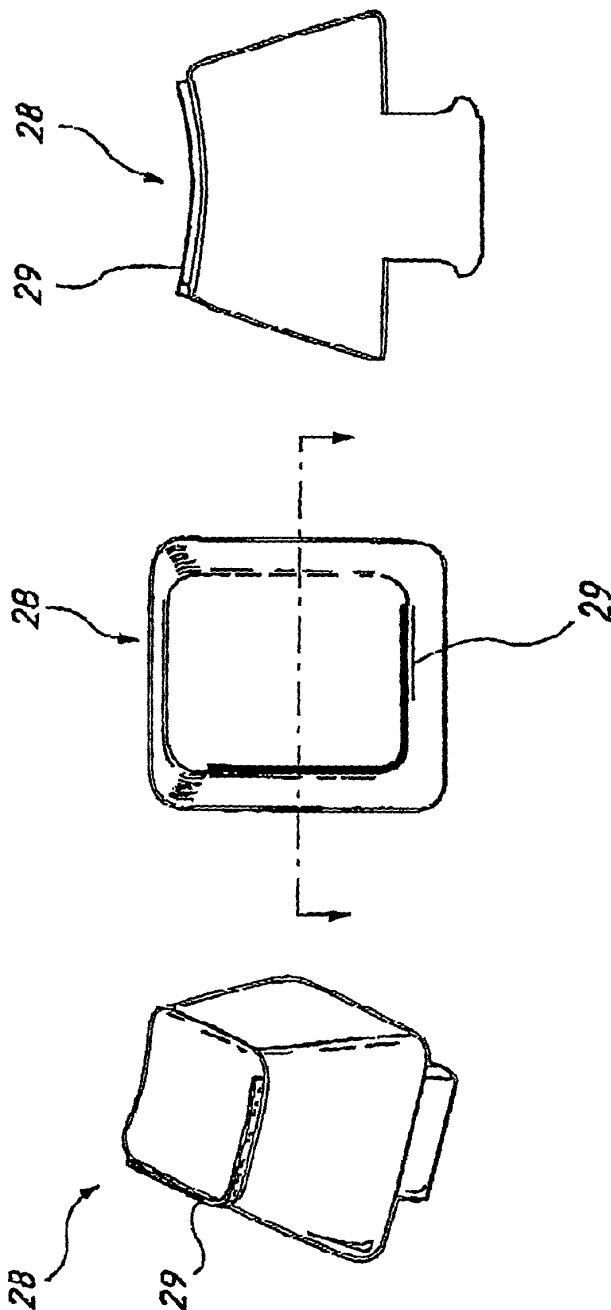
FIG. 2B

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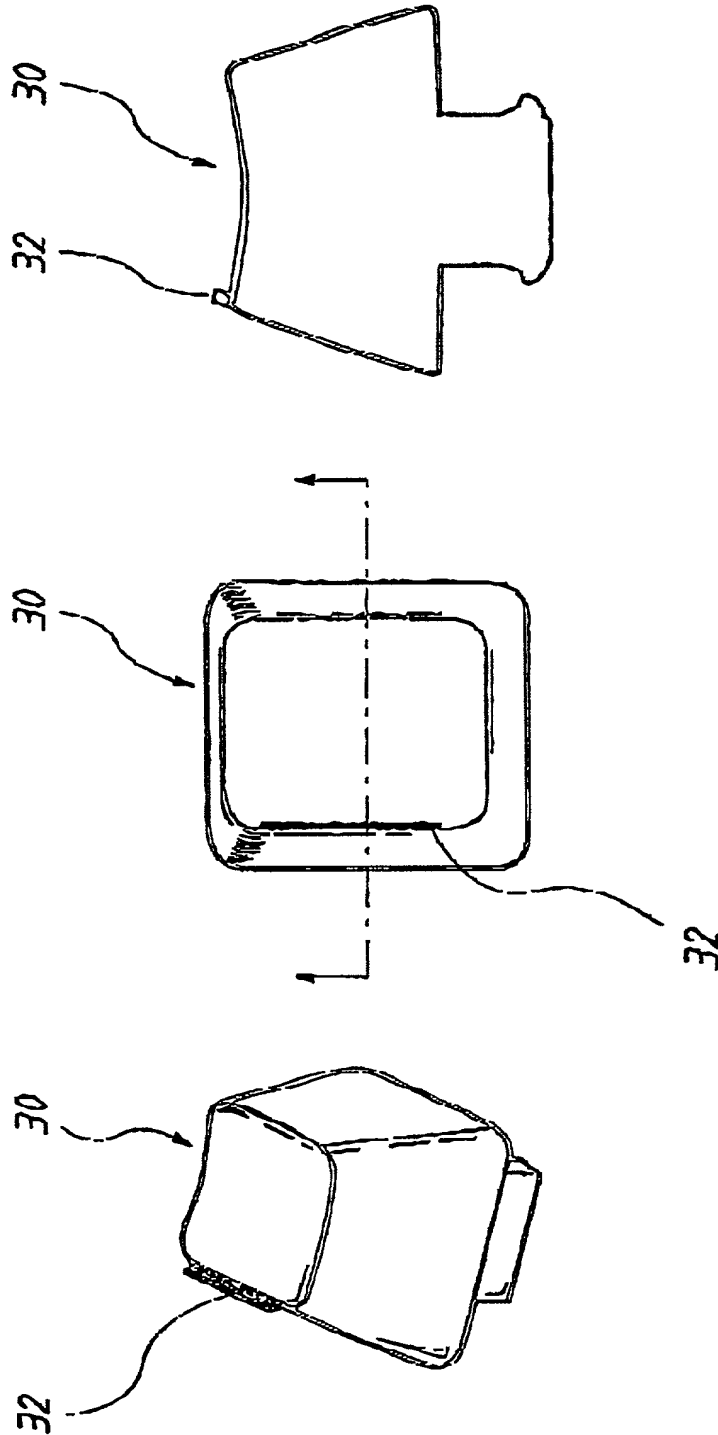


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Substitute Sheet  
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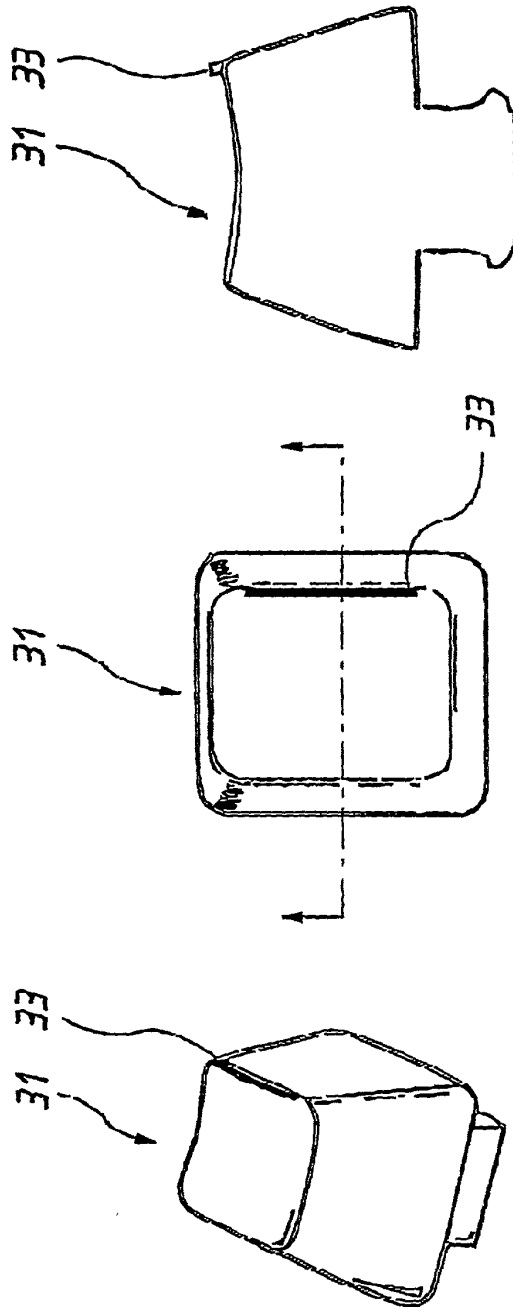


FIG. 2F



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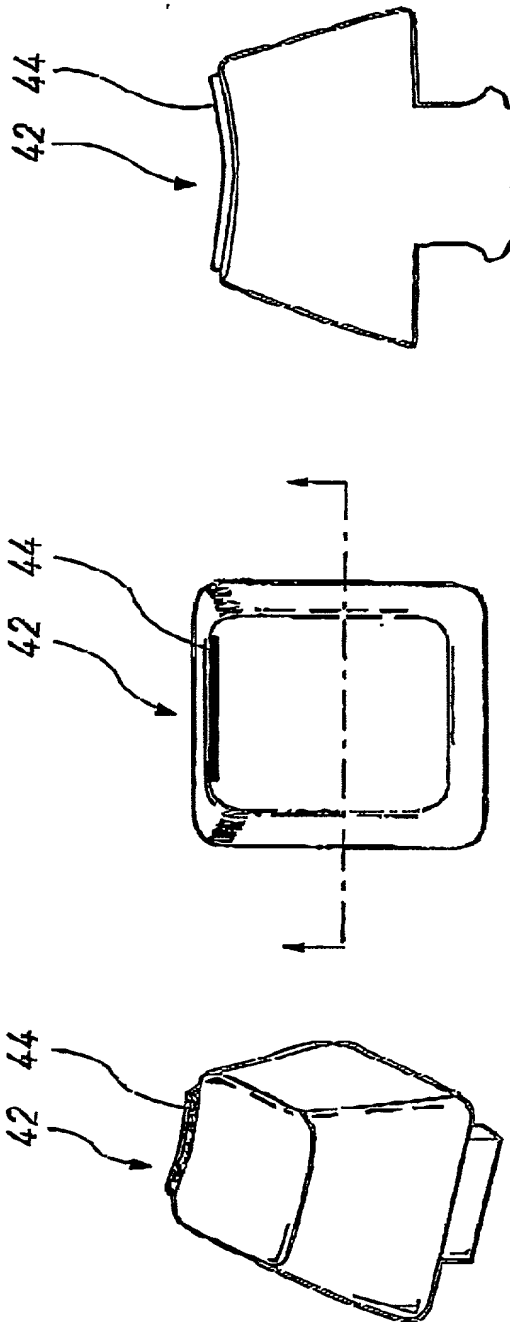
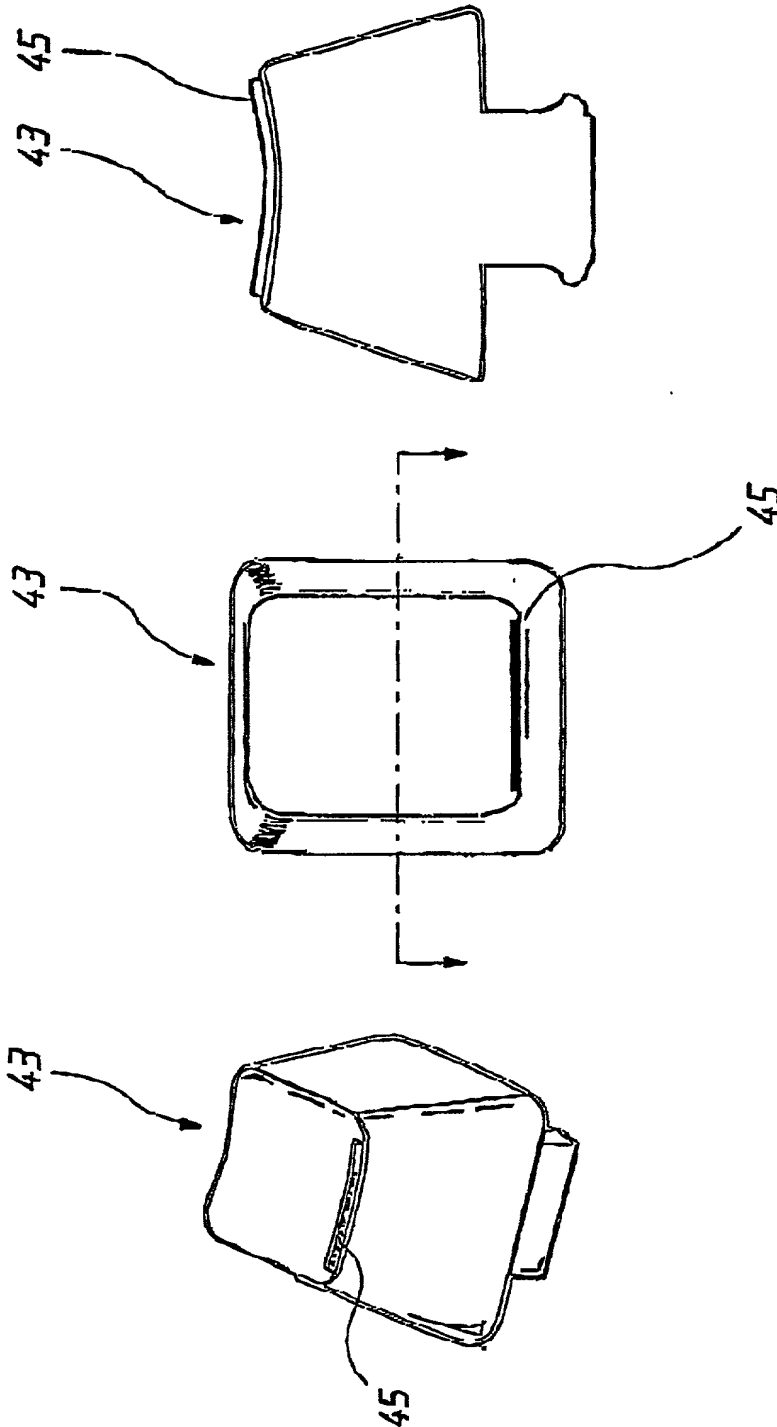


FIG. 26

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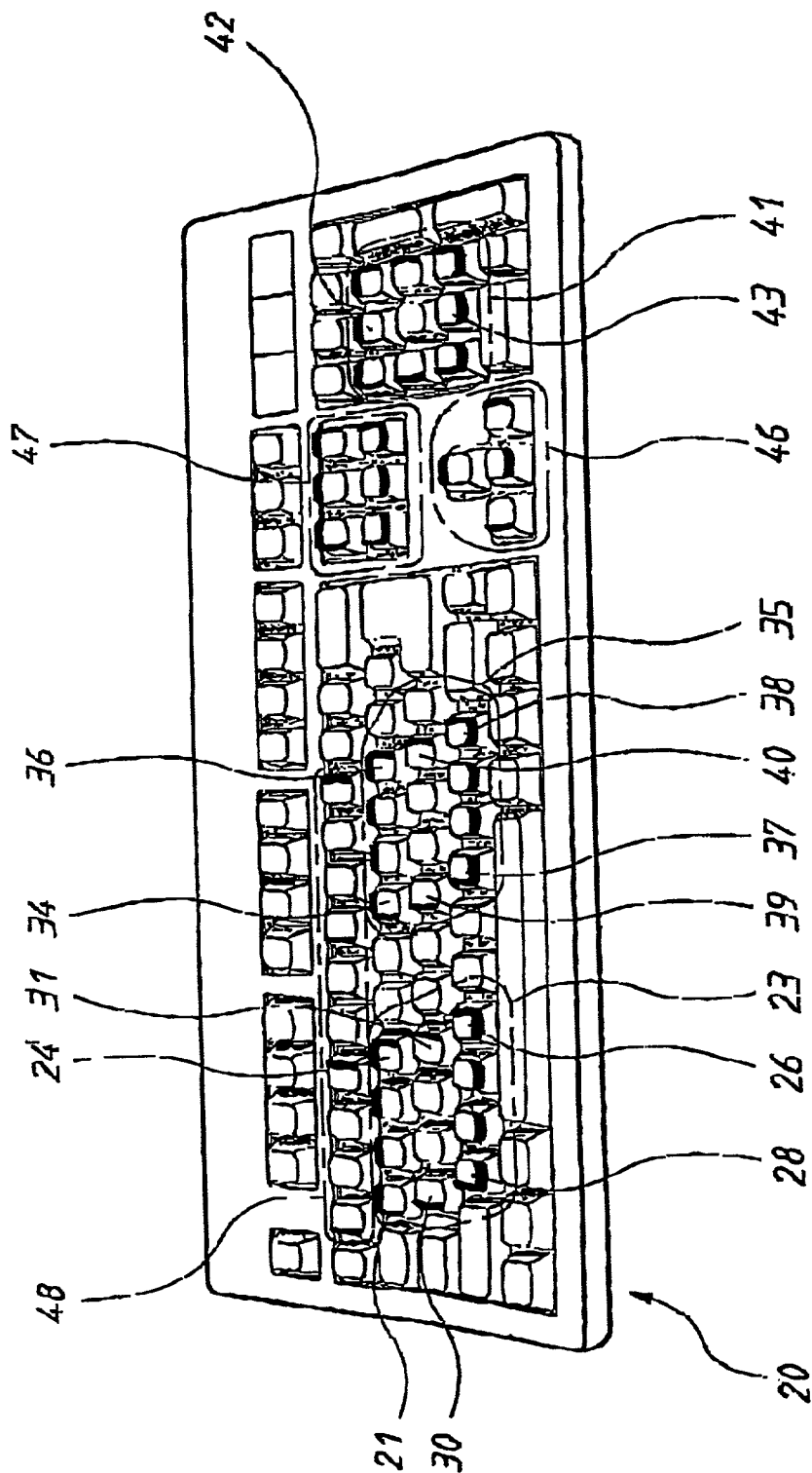


FIG. 3

**COMBINED DECLARATION AND POWER OF ATTORNEY**

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,  
CONTINUATION OR C-I-P)

As a below named inventor, I hereby declare that:

**TYPE OF DECLARATION**

This declaration is of the following type: (check one applicable item below)

- ☐ original  
☐ design  
☐ supplemental

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.

- ☒ national stage PCT

NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P

- ☐ divisional  
☐ continuation  
☐ continuation-in-part (C-I-P)

**INVENTORSHIP IDENTIFICATION**

**WARNING:** If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and sole inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**TITLE OF INVENTION**

A Locating Key for a Keyboard or Keypad

**SPECIFICATION IDENTIFICATION**

the specification of which: (complete (a), (b) or (c))

- (a) ☐ is attached hereto.  
(b) ☐ was filed on August 9, 2001 as ☐ Serial No. 09 /913,105  
or ☐ Express Mail No., as Serial No. not yet known \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable).

NOTE: Amendments filed after the original papers are deposited with the PTO which contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 CFR 1.67.

- (c) ☒ was described and claimed in PCT International Application No. PCT/AU00/00691 filed on 21 June 2001 and as amended under PCT Article 19 on \_\_\_\_\_ (if any).

#### ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information

- ☒ which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56

(also check the following items, if desired)

- ☐ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent, and
- ☐ In compliance with this duty there is attached an information disclosure statement in accordance with 37 CFR 1.98

#### PRIORITY CLAIM (35 U.S.C. § 119)

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of an PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

- (d) ☐ no such applications have been filed.
- (e) ☒ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

**A. PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION  
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119**

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 118
AU	PQ1115	21 June 1999	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
AU	PQ4525	8 December 1999	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
PCT	PCT/AU00/00691	21 June 2000	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

**ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION**

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*NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C § 120.*

**POWER OF ATTORNEY**

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(List name and registration number).*

PAUL B. WEST, 18947  
JOSEPH HANDELMAN, 26179  
JOHN RICHARDS, 31053  
JOHN J. CRYSTAL, 26360  
ALAN K. ROBERTS, 17777  
S. DEVALLE GOLDSMITH, 14383

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IAIN C. BAILLIE, 24090  
THOMAS F. PETERSON, 24790  
RICHARD P. BERG, 28145  
JULIAN H. COHEN, 20302  
JANET I CORD, 33778

*(check the following item, if applicable)*

- ☐ Attached as part of this declaration and power of attorney is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS

TO: Customer No 00120

LADAS AND PARRY  
26 WEST 61<sup>ST</sup> STREET  
NEW YORK, NEW YORK 10023

(212) 708-1930

### DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

### SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name as it should appear on the filing receipt and all other documents.

Full name of sole or first inventor

Alberto  
(GIVEN NAME)

B  
(MIDDLE INITIAL OR NAME)

Sabato  
(FAMILY OR LAST NAME)

Inventor's signature

Date 9 November 2001 Country of Citizenship Italy

Residence Mosman, NSW, AUSTRALIA AUX

Post Office Address 21 Clanalpine Street, Mosman, New South Wales 2088,

AUSTRALIA

Full name of second or joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

(FAMILY OR LAST NAME)

Inventor's signature

Date \_\_\_\_\_ Country of Citizenship \_\_\_\_\_

Residence \_\_\_\_\_

Post Office Address \_\_\_\_\_

Full name of third or joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

(FAMILY OR LAST NAME)

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_ Country of Citizenship \_\_\_\_\_

Residence \_\_\_\_\_

Post Office Address \_\_\_\_\_

CHECK PROPER BOX(ES) FOR ANY OF THE FOLLOWING ADDED PAGE(S) WHICH  
FORM A PART OF THIS DECLARATION

☐ Signature for fourth and subsequent joint inventors. *Number of pages added*

\_\_\_\_\_

...

☐ Signature by administrator(trix), executor(trix) or legal representative for deceased or  
incapacitated inventor. *Number of pages added* \_\_\_\_\_

...

☐ Signature for inventor who refuses to sign or cannot be reached by person authorized  
under 37 CFR 1.47. *Number of pages added* \_\_\_\_\_

...

☐ Added page for signature by one joint inventor on behalf of deceased inventor(s)  
where legal representative cannot be appointed in time (37 CFR 1.47)

...

☐ Added pages to combined declaration and power of attorney for divisional,  
continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added \_\_\_\_\_

...

☐ Authorization of attorneys to accept and follow instructions from representative.

...

(If no further pages form a part of this Declaration, then end this Declaration with this page and  
check the following item:)

☐ This declaration ends with this page.

(Declaration and Power of Attorney [1-1] – page 5 of 5)



Practitioner's Docket No. U 013592-8

CHAPTER II

IN THE UNITED STATES ELECTED OFFICE (EO/US)

PCT/AU00/00691	21 JUNE 2000	21 JUNE 1999
INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED

A LOCKING KEY FOR A KEYBOARD OR KEYPAD  
TITLE OF INVENTION

ALBERTO B. SABATO  
APPLICANT(S)

Box PCT  
Assistant Commissioner for Patents  
Washington, D.C. 20231  
ATTENTION: EO/US

COMPLETION OF FILING REQUIREMENTS  
FOR INTERNATIONAL APPLICATION ENTERING U.S. NATIONAL STAGE  
IN U.S. ELECTED OFFICE (EO/US) UNDER 35 U.S.C. § 371

(check and complete the applicable item, if applicable)

- [x] This replies to the Notice of Missing Requirements under 35 U.S.C. § 371 and 37 C.F.R. § 1.495 (FORM PCT/DO/EO/905).  
[x] A copy of FORM PCT/DO/EO/905 accompanies this response.

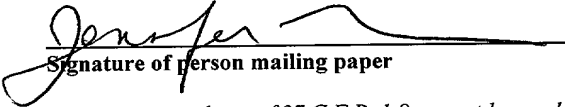
**WARNING:** Where the items being submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. § 1.10 must be used (because international application papers are not covered by an ordinary certificate of mailing. 37 C.F.R. § 108(2)(xi)).

CERTIFICATION UNDER 37 C.F.R. 1.10\*  
(Express Mail label number is **mandatory**.)  
(Express Mail certification is optional.)

I hereby certify that this Completion of Filing Requirements and the papers indicated as being transmitted therewith are being deposited with the United States Postal Service on this date November 20, 2001 in an envelope as "Express Mail Post Office to Addressee," Mailing Label Number EV011019215US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

JENNIFER RASHKIN

(type or print name of person mailing paper)

  
Signature of person mailing paper

**WARNING:** Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

**\*WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).  
"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

00013105-112001

NOTE: Documents and fees must be clearly identified as a submission to enter the national stage under 35 U.S.C. § 371. Otherwise, the submission will be considered as being made under 35 U.S.C. § 111. 37 C.F.R. § 1.495(g).

### DECLARATION OR OATH

- I. (a) ☒ No original declaration or oath was filed. Enclosed is the original declaration or oath for this application.

OR

- (b) ☐ The declaration or oath that was filed was determined to be defective. A new original oath or declaration is attached.

NOTE: For surcharge fee for filing declaration after filing date complete item IV(3)

NOTE: Acceptable minimums in the declaration in an ordinarily filed U.S. application for identification of the specification to which it applies are the name of the inventor and (1) serial number, (2) attorney docket number that was on the application as filed and the filing date, (3) title of the invention and filing date, (4) title of invention and reference to a specification that is attached to the declaration at the time of execution and filed with the declaration, or (5) title of invention and a statement by a registered attorney that the application filed in the PTO is the application which the inventor executed by signing the declaration. If the identification (4) is used it must be accompanied by a statement that the "attached" specification is a copy of the specification and any amendments thereto that were filed in the PTO to obtain the filing date. Such a statement must be a verified statement if made by a person not registered to practice before the PTO. Notice of September 12, 1983 (1035 O.G. 3).

NOTE: Another minimum found acceptable in the declaration is the filing date (i.e., date of express mail) and the express mail number, useful where the serial number is not yet known. But note the practice where the express mail deposit is a Saturday, Sunday or holiday within the District of Columbia. 37 C.F.R. § 1.10(c).

NOTE: See 37 C.F.R. § 1.41(a).

(complete as applicable)

Attached is a

- (c) ☐ Statement by a registered attorney that the application filed in the PTO is the application that the inventor executed by signing the declaration.
- (d) ☐ Statement that the "attached" specification is a copy of the specification and any amendments thereto that were filed in the PTO to obtain the filing date.
- (e) ☐ Statement that substitute specification contains no new matter.
- (f) ☒ Preliminary Amendment previously filed on September 5, 2001.
- (g) ☐ Transmittal of Formal Drawing(s) Prior to Notice of Allowance
- (h) ☐ Submission of "Sequence Listing," computer readable copy, and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence

## AMENDMENT

II.

(complete as applicable)

- ☐ An amendment in accordance with 37 C.F.R. § 1.121 is attached.  
☐ The attached amendment cancels claims \_\_\_\_\_ inclusive.

### TRANSMITTAL OF ENGLISH TRANSLATION OF NON-ENGLISH LANGUAGE PAPERS

- III. ☐ Submitted herewith is an English translation of the non-English language international application papers as originally filed. It is requested that this translation be used as the copy for examination purposes in the PTO. (See 37 C.F.R. 1.495(c))

NOTE: For fee for processing a non-English application, complete item IV(4).

NOTE: A non-English oath or declaration in the form provided or approved by the PTO need not be translated. 37 C.F.R. § 1.69(b).

## FEES

IV.

NOTE: See 37 C.F.R. § 1.28(a).

1. Fees for claims

- ☐ each independent claim in excess of 3  
(37 C.F.R. § 1.492(b))—\$84.00; small entity—\$42.00 \$ \_\_\_\_\_
- ☐ each claim in excess of 20  
(37 C.F.R. § 1.492(c))—\$18.00; small entity—\$9.00 \$ \_\_\_\_\_
- ☐ multiple dependent claims(s)  
(37 C.F.R. § 1.492(d))—\$280.00; small entity—\$140.00 \$ \_\_\_\_\_

2. Surcharge fees

- ☒ surcharge set forth in 37 C.F.R. § 1.492(e) for accepting the declaration later than 30 months after the priority date in filing an application in the U.S. as a designated office—\$130.00; small entity—\$65.00 \$ 65.00

NOTE: The processing fee in the next item 3 below is not subject to a reduction for small entity status.

3. ☐ processing fee set forth in 37 C.F.R. § 1.492(f) for acceptance of an English translation later than 30 months after the priority date—\$130.00 \$ \_\_\_\_\_

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01 FC:254

65.00 OP

Total Fees

\$ \_\_\_\_\_

## SMALL ENTITY STATUS

- V. ☒ A statement that this filing is by a small entity  
(Completion of Filing Requirements for International Application Entering U.S. Elected Office (EO/US))

NOTE: See 37 C.F.R. § 1.28(a).

*(check and complete applicable items)*

- [x] is attached.  
[ ] A separate refund request accompanies this paper.

### EXTENSION OF TIME

*(complete (a) or (b), as applicable)*

#### VI.

The proceedings herein are for a patent application. Accordingly, the provisions of 37 C.F.R. § 1.136(a) apply.

- (a) [ ] Applicant petitions for an extension of time, the fees for which are set out in 37 C.F.R. § 1.17(a)(1)-(4), for the total number of months checked out below:

	<u>Extension (months)</u>	<u>Fee for other than small entity</u>	<u>Fee for small entity</u>
[ ]	one month	\$ 110.00	\$ 55.00
[ ]	two months	\$ 400.00	\$ 200.00
[ ]	three months	\$ 920.00	\$ 460.00
[ ]	four months	\$ 1,440.00	\$ 720.00
[ ]	five months	\$ 1,960.00	\$ 980.00
		Fee:	\$ _____

If an additional extension of time is required, please consider this a petition therefor.

*(check and complete the next item, if applicable)*

- [ ] An extension for \_\_\_\_\_ months has already been secured. The fee paid therefor of \$ \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ \_\_\_\_\_

or

- (b) [x] Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

## TOTAL FEE DUE

### VII.

The total fee due is:

Completion fee(s) \$ 65.00  
Extension fee (if any) \$ \_\_\_\_\_  
TOTAL FEE DUE \$ 65.00

## PAYMENT OF FEES

### VIII.

- ☒ Enclosed is a check in the amount of \$ 65.00  
☐ Charge Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_  
☐ A duplicate of this request is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

## AUTHORIZATION TO CHARGE ADDITIONAL FEES

### IX.

**WARNING:** Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges if extra claims are authorized.

NOTE: "A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

NOTE: "Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

- ☒ The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 12-0425

☒ 37 C.F.R. § 1.492(a)(1), 1.492(a)(4) (filing fees)

☐ 37 C.F.R. § 1.492(b), (c), and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

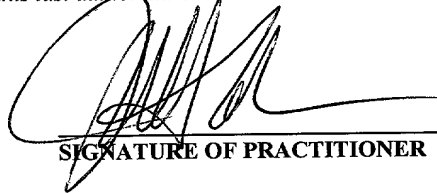
- ☒ 37 C.F.R. § 1.17 (application processing fees)
- ☒ 37 C.F.R. § 1.17(a)(1)-(5)(extension fees pursuant to § 1.136(a)).
- ☒ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b)).

**NOTE:** *Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).*

**NOTE:** *37 C.F.R. § 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.*

- ☐ 37 C.F.R. § 1.492(e) and/or (f) surcharge fees for filing the declaration and/or an English translation of an international application later than 30 months from the earliest-claimed priority date.

**WARNING:** *It would be wise to always check this last authorization.*

  
\_\_\_\_\_  
SIGNATURE OF PRACTITIONER

Reg. No.: 20,302

Julian H. Cohen

*(type or print name of practitioner)*

Tel. No.: (212) 708-1887

c/o Ladas & Parry

26 West 61<sup>st</sup> Street

P.O. Address

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New York, N.Y. 10023